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THE GROUND OF THE VALIDITY OF KNOWLEDGE[1]

IV. The Justification of Premises and the Structure of Knowing: Conclusion

On the basis of the investigations and conclusions presented in the preceding articles, especially of those concerning the character of the correctness of data, of perception and its object, and of the implication of a transcendent, it is now possible to state both more completely and in greater detail than formerly the conditions upon which the success, and so truth, of alogical cognition, particularly foreknowledge by inference, depends, and so also to gain answers to the remaining of the principal questions raised in my initial paper.

Now it is, of course, well known that this foreknowledge, as an event within the individual, takes place by means of premises gained, in general, by inductive methods. These premises may be either special, strict laws, or generalizations,[2] empirical, or highly symbolic and abstract laws in the domain of theory. Let it be granted, too, that in the derivation of these inductive laws, for which, of course, measurement is necessary, and although this is possible in some cases only by instruments constructed in the light of theory, the usual recognized norms and maxims of scientific analysis have been observed. It will then result—since perception is here the 'starting-point' of knowledge—from that unequivocal and determinate relation of reference, etc., between perceptive act and transcendent object, which constitutes the 'correctness of data' in the cases examined, both that the *generalization* to all cases is *justified* and that the *inference-conclusion* is *ensured of success.* The justification and ensurement so result because, with it accepted that other conditions, those indeed of formal correctness and of the independent existence of the transcendent, are also demanded for success, the correctness of data which, too, is necessary, either implies alogically or is itself possible only through and is guaranteed only by this last ontological condition. That this is the case can, I think, be established as follows: Admitting that for any investigation in hand the purpose of this decides the degree of determinateness which is accepted as satisfactory in the 'cases examined,' nevertheless it has been found that the transcendence is mediated and made determinate through an unequivocal causal connection between the transcendent elements of the perceived object on the one hand, and those forming, within the subject, the conditions for the perceptive act on the other. But the perceived object is in turn similarly connected with still other transcendent elements, these with others, and so on, and these all together as a manifold form a permanent, uniformly acting and causally interrelated transcendent agent. One and the same transcendent is implied, then, to have both the data correct and the inference 'come true.'

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[1] The three preceding articles appeared in this Journal, Vol. III., Nos. 8, 10 and 12, respectively.

[2] Compare Sigwart, 'Logic,' translated by Dendy, Vol. II., pp. 370–374.

Accordingly, with this transcendent existing, it is evident that its causal order, persistence and interconnection are the ontological conditions under which those cases, which are other than and yet held to be like the ones examined and to all of which the generalization refers, both *actually are,* 'under the same conditions,' like those examined and are causally connected with them. However, these ontological conditions and relations may or may not include the specific ones for the perceptive act itself. In fact, as the inductive procedure usually takes place, they do not; the conditions for the perception itself, although 'working' and mediating the 'correctness,' are themselves not directly perceived, but, rather, only those 'objective' conditions and relations, etc., which are known as 'other than' the subject. It is these that are generalized, and it is through their causally uniform connection, first, in one direction, with the transcendent 'elements' conditioning the perception itself, and, secondly, in the other, with those beyond, that the generalization is justified and the inference assured of 'working successfully.' On the other hand, the conditions for the perceptive act may, of course, also be stated in a law, so that it may be said that if certain specific ones of these are also present in the future, then some specific transcendent object will be perceived and the prediction verified. In either case the success of the inference is ensured only on such an ontological basis, 'biologically implied,' and submitting to statement in either hypothetical, categorical or apodictic form.

From all this there results a number of important characteristics of the alogical *knowing* process as including both the making and the use of the generalization for inferential purposes.

First, and analogous to perception, but with, of course, the difference between the particular, present and the universal, the generalization, when taking place as a conscious experience, transcends itself by making a psychological and yet determinate reference to a manifold, past, present and future, so that this transcendency is one with biological implication and is, too, mediated on a transcendent basis.

When, now, the generalization is applied to some present, particular, now-perceived quality, from which by inference the 'mental time-leap' to one as-yet-not-perceived is to be made, each successive judgment of the inference process transcends itself in a similar manner, with, therefore, a determinateness of this relation, and so a *correspondence* between the transcendent causal order on the one hand and the elements of the inference process on the other.

Secondly, as in perception, so here, by virtue of their self-transcendence, there is known 'in' the judgments of the entire inference process, that is, in the case of this being an instance of knowing in the physical sciences, something 'different in kind'; something which, so far as it either was, is now or will be 'already there,' is thereby made just this difference with, that it is referred to, known and implied by the knowing process, and is both 'in' and yet 'beyond' this.

Thirdly, although known in a way specifically different from that in which the *perceived* object is known, since perception and inference are species of cognition, nevertheless the object of this inferential knowing experience either has been, is now or will be as *real,* in a sense different from merely valid, as is the object of *normal* perception. The transcendent elements, although unperceived and perhaps unperceivable, are through their causal connection with the real and known object of perception also both real and known.

The transcendent is, then, that ground for the validity of alogical knowledge which is external to this knowledge itself. It is the general ontological condition of memory, of perception, of alogical inference, perhaps of all experience. It is the *possibility* of experience, but not possible experience; yet it is experienced. For any cognitive experience it is always 'beyond' at the same time that, as known, it is 'in' this experience. It is known if the transcendent conditions for any specific kind of knowing are present; if these are not present, then it is a 'thing-by-itself,' but not '-in-itself.'

We are now in a position to offer a solution of still others of the problems which were suggested in the first article. If the genetic view of knowledge is taken, that 'thought is an instrument of adaptation,' etc., and if alogical cognition is that means of adjustment which can perhaps best conserve and further life and so even make other experiences possible, it appears that such important foreknowledge is both real and possible only on the basis of the conditions above enumerated. In fact, the conviction that these are present, to ensure the success of foreknowledge, has a practical outcome quite different from that which any other view has. In the instance, then, of conflict or discordance, the felt-need of readjustment does not itself constitute this outcome. Although in the need, as directly experienced, the transcendent may not be distinguished from the immanent, or, even granting that it is, since the knowledge of the detailed conditions for success may be absent, so the need does not disclose directly that which is revealed ultimately, namely, that an essential condition in the readjustment is an ontological ground. It is to this as a transcendent manifold that the subjective readjusting process must conform in order to attain that success without which it is meaningless. The character of this conforming, which constitutes the correspondence between the inference process as a series of judgments and as a natural event and the transcendent manifold, has already been presented; but there are still *further details* of this, the statement of which will present the *manner* in which that which is transcendent to consciousness and is order, etc., is known in conscious experiences, characterized as they seemingly are by lack of order and permanence.

A beginning may be made here with the perceptive judgment, which may be dismissed briefly. Whether this be identical with, or different from and yet simultaneous with, or subsequent to the act of sense-perception, it does not refer and relate to the content of perception, but rather to the same transcendent object to which the perceptive act refers. As a psychological event, distinct from the word- or other symbols which may formulate it, the perceptive judgment makes a determinate and unequivocal reference beyond itself to transcendent elements; and, as in the case of perception, this reference may be present or take place without proof that it so is, just as an object may be 'really there' without proof. Truth, then, in the sense here of 'correct' and of 'correspondence,' is independent of proof. Accordingly, it may be said that a perceptive judgment is true, if the characteristics, qualities, etc., known after the manner of transcendence and of alogical implication 'in' the 'content' of, and 'stood for' by the symbols of its formulated predicate, *actually* do exist in the transcendent object of which the assertion is made. If they do so exist, then the determinateness of the relation between them and the elements of the judgment process constitutes their correspondence. The proof in any particular instance that they are present is derived only from the system of knowledge; but upon this proof the actual presence is not dependent.

But the judgments with which science deals are, for the most part, 'derived' and universal, as opposed to the perceptive judgments as original, etc.; and in the physical sciences, which were selected for analysis in order to get at the epistemology of scientific knowing, the derived judgments are in symbolic and equational form.

The typical procedure here consists, first, in accepting certain symbols for the qualities, etc., perceived either directly or, by the use of instruments, indirectly; and, secondly, of securing for these symbols definite numerical values by means of measurement. From the cases so examined equations are obtained expressing empirical laws, the justification of which has been presented. From them, thirdly, although they themselves involve or presuppose certain principles of interpretation, by means of the further use of instruments constructed in the light of theory and by mathematical manipulation according to the rules of the calculus and the principles of logic, more and more 'abstract' relationships are obtained, and the domain of theory is reached. In the instance of making an application of such a theory to a particular case, as, for example, in predicting an event, a procedure in general the reverse of the above is adopted. Such a system, in algebraic form, exact, detailed and complete, constitutes that which I would classify as theoretical alogical knowledge, always with the possibility of some specifically practical application.

What, now, is the detailed character of the *knowing experience* of the physicist while making actual use of such a body of knowledge in either 'working' up to or away from theory? In this question a distinction is implied between knowledge and knowing; the latter is thinking, understanding, and demands present consciousness, while the former term designates much not directly related to or in present consciousness.[3]

As constituting this 'scientific knowing,' first, there is normally a consciousness of the symbol; this is either perceived or, in silent thinking, presented as a symbol concept. But the symbols both have a meaning—they are not merely empty formulæ—and stand either for transcendent objects, qualities, etc., or for the technical operations of arithmetic and the calculus. This distinction between meaning and object symbolized is quite necessary and is justified, first, I believe, by its analogy to the distinction between the 'content' and the object of perception; in the judgment the *meaning* of the symbols *is* the *'content.'* But, secondly, that a meaning is present and distinct from the object is shown by the fact that the symbols are *understood;* the symbolized judgment is an experience or event within *subjective limits,* though referring beyond itself to an object.

What, now, is the *status* of the meaning of those symbols which at the same time that they are 'associated' with this, also stand for transcendent objects, etc.? In answer thereto it may be said that, in general, this status as well as the extent to which there is a consciousness of the symbols will vary with the degree of attention. Granted, in the first place, that this is directed to the meaning, as constituting this there may in some cases be *images* in terms ultimately of visual or muscular or some other kind of perception. If these images are present they do not, however, constitute the meaning completely and adequately; rather, there is always a residue of this which can not be so 'imaged.' This, indeed, forms an essential and distinguishing characteristic of scientific knowing and is, perhaps, its most important justification and value, in that, in accordance with it meanings are developed which can not be imaged in their entirety and transcendent relations are known which can be known in no other way than by these symbolic methods.

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[3] The following account of the psychology of scientific knowing may be compared with the views expressed by James, 'Psychology,' Vol. I., Chap IX., 'The Stream of Thought,' and by Hobhouse, 'The Theory of Knowledge,' pp. 101–113, and especially with the results presented by Binet, in his 'L'étude expérimentale de l'intelligence,' Paris, 1903; with these it is in essential agreement, yet it is also an independent analysis.

So far, then, as images are thus inadequate, there must be granted a *second type of meaning,* for which it is frankly impossible to form images in terms of any sense, even though there be both sufficient time and attention allowed for this attempt. But, thirdly, there is the more usual case, equally interesting and valuable, however, for the psychology of scientific knowing, in which, because either of familiarity with and habitual use of the symbolic methods of thinking or because of greater attention to the symbols, or both, the scientist neither needs to nor, in fact, does call up images even though, were more time given, it might be quite possible to do this to a limited extent.

In any of these instances, then, in which images are either inadequate or wholly absent and yet meanings are undeniably present, since a knowing, understanding and thinking process is taking place, the question is of importance as to what the manner and character of these may be.

There are two possibilities here, the limits of which in any particular case it would be difficult to fix exactly without experimental determination, but both of which can be established in a general way by simple careful observation of one's own 'symbolic knowing' and by the interrogation of others. The first is, that at the same time that there is a perception or fairly clearly marked image of the symbols or signs the meaning is present as in the fringe of consciousness; the second, an extreme and perhaps limiting case, that the meaning is not in consciousness at all. This fits that type particularly well in which 'knowing' by a certain system of symbolic methods has become habitual. It is psychologically and perhaps paradoxically an 'economy of thought' that the meaning, in such 'symbolic knowing,' should be either in whole or at least in part below the threshold; and it is further possible that this economy itself depends on this very characteristic, that it is required not that meanings be either imaged or in the fringe, but only that an awareness of the symbols be present, in order that thinking, and knowing, and understanding shall be taking place. Accordingly, the principle may be stated, that what we think is not identical with what we image, and—may I venture this?—that thinking is not wholly identical with consciousness. It may be, in fact, that, just as the greater part of that which is at present 'our knowledge' is below the threshold, so also can 'thinking' be likewise 'situated,' so that both knowledge and knowing are in part transcendent processes.

However, that they should be this under certain circumstances is quite compatible with, indeed is additional support and evidence for, the mediation of the transcendence of the cognitive act by transcendent relations and events. In the case of thinking and knowing it is, in fact, just such transcendent events within the organism which make up part of the subjective reaction. Under these circumstances the term 'experience' might be used as a genus which would include both conscious and unconscious adjustments, etc., within the individual. But, even then, it would connotate that which already has been and might again be 'above the threshold,' and so connected with consciousness. However, as a possible exception to this last, but yet suggested by and in general accordance with this 'status' of knowing, as presented above, it may be that certain meanings arise not by abstraction from perception, or from images, or even from the 'fringe,' but without our consciousness and through the working of external transcendent elements on those of the organism, and that they then emerge into consciousness as those concepts, etc., which are sometimes held to be regulative and '*a priori,*' and are perhaps of a non-imageable form.

But, to return to our analysis, the following different 'aspects' to or constituents of the knowing process can now be distinguished; first, the series of symbols; second, the meaning, associated with the symbols, and identical with the content of thought, analogous to the 'content' of perception. This content may be present as imageable or not-imageable, either in the fringe or not, or as 'below the threshold,' the relative amount of each one of these varying with the circumstances and with individuals.

Is it possible, now, to discover still another, a third, aspect? That there is this, comes *a fortiori,* first, from the fact of those conditions which are both necessary for the success of alogical knowledge and the ground and means of this; and, second, from the character of perception and its object. The transcendent, which, through one or more of its characteristics of causal regularity, etc., is such a ground, and means, and mediator, is, by virtue of these very relationships to knowledge and knowing, also their object; it is the *object known* in that knowing process which consists in any present use of the universal judgments of physical science, be they 'empirical,' or abstract laws in equational form, and accordingly it is to be distinguished from the *content.* This last is identical with the subjective thinking act, is distinct from the symbols which formulate it, constitutes their meaning, and takes place as the subjective reaction excited by the presentation of the symbols as they recur in the reasoning process. The object is accordingly that which the symbols symbolize, that which the meanings denote as they transcend themselves, that which they imply alogically, that, too, which is a causal element or group in that which brings about success and is the ontological justification of induction. As known in this way the object is both 'beyond' and yet 'in' the meaning; as standing in *this* relation the two form a certain and very definite kind of *unity,* not one in which, as 'in an infinite night all cows are black,' nor one to be called advantageously an all-containing and, perhaps, all-difference-annihilating 'experience,' but one in which there are diverse elements, both transcendent and immanent, *related alogically.* As characteristic of this relation between the elements of the transcendent manifold and those of the content, identical as it is with transcendency and implication from one standpoint, and with causal mediation from another, there is a determinateness and unequivocalness which constitute correspondence.

Known in this way, then, are the things, qualities, etc., of simple perception, or of that made possible by the use of instruments and theory; known are the transcendent relations and events, the permanence and causal uniformity, even the unalterability, the independence, the difference in kind, with this knowledge in some cases made possible only by the symbolic methods employed. But just as this permanence and uniformity, necessary for success, can be found only in a transcendent, so is it in turn found that all those characteristics which are demanded of this make it necessary to regard both space and time as themselves transcendent. That which is implied for the whole is implied also for the parts necessary to that whole. Accordingly, in the mathematical formulation of this knowledge symbols appear for both space and time; to these the content both of perception and of scientific knowing refers.

Since the transcendent is known in this way as a manifold of elements in *various relations,* by means of which, *alone,* certain necessary characteristics can be obtained, is it, therefore, *such* a unity that, because it is also related to knowing in a very definite way, the two together, transcendent and individual experience, form an 'absolute'? To this it may be replied that, so far as there are relations, there is also, admittedly, some kind of unity and some dependence, although these may be to just the extent of those relations. But, secondly, although of course such a unity may be termed an 'absolute,' and though it may have characteristics which the parts have not, nevertheless as an 'absolute' it plays a rôle not different from that which the *modest unity,* given by these implicative and other relations between the transcendent and individual experience, itself plays. It is, however, *to a certain extent* such an absolute that is invoked by the pure empiricist when he appeals to an all-including experience, the experience, namely, which has been found to bear the same relations to individual experience as *this plus* its alogical implications, etc., does to itself. Accordingly, to call such a whole, because of the relation-given unity of its parts, the Absolute or Experience, etc., is to make a difference in terms which makes no difference in reality. In any case there is always present an alogical dualism between what has been called in these articles the transcendent and the immanent, which relation, not itself logical, may be, and perhaps always is, stated propositionally in essentially the *same logical form.*

However, the existence of such a relation, whose details have been developed and presented in these articles, although identical with a unification, does not, so far as it is present, either make it possible or demand that either the transcendent or this *plus* individual experience should be imaged as an at bottom qualitatively similar and homogeneous whole. Notwithstanding that certain relations, etc., as *known* by scientific symbolic methods, can not be imaged, the attempt is, however, frequently made, and is perhaps almost unavoidable, for certain psychological reasons, to image the whole as like in kind to some part which can be imaged. Something like this is, indeed, attempted when, for example, the whole transcendent is 'reduced' to the likeness of 'undifferentiated experience,' or of 'meaning,' or of consciousness, etc., and it is in this way that certain types of ontology originate. These may be legitimate enough, first, so far as they are conditioned by certain major postulates, made necessarily without proof, and due in each case to some emotionally rooted preference; and, second, so far as they give internally consistent systems. But they are ontologies which, presented in different sets of terms, do not make a difference either with scientific knowledge and knowing, or with action based on these, or with their outcome in success or failure. This is shown by the fact that, whatever may be the type-phenomenon to which the whole is reduced, nevertheless the propositionally stated logic of the *real alogical* differences and relations among transcendent elements themselves, and between these and individual conscious experience, is essentially the same in all. It is this *logical sameness* that persists in the ontologies as they differ, and it is in this, too, that that knowledge consists whose outcome, in success or failure, as a means of readjustment, may condition the very possibility of further experiences. For this reason, also, and in this respect, is this knowledge independent of any one ontology, and the former important, the latter not. But this is not to say that, for other action, based on other motives, these ontologies are not important and do not make a difference, or that some one may not be true and the others false.

Accordingly, as that which is always a term in the propositionally and so logically expressed real alogical relations of 'knowing' to that which is 'other than' and 'beyond' it, it is upon the peculiar and distinctive characteristics of the *transcendent* that knowledge and knowing depend. For *these* consciousness is not a sufficient, though it may be a necessary, condition. Their structure and nature can not be stated in such simple terms as, for example, that the object known is either like, or 'contained in' consciousness, or is a function of this. Rather, as it has been my purpose to demonstrate, this structure is complex and involved and yet can be stated fairly definitely.

The particular species of knowledge, however, which has been used as the subject of our analyses, is the alogical, as including perception, etc., and scientific knowing. From this there was distinguished at the very outset, as the means for the satisfaction of a *different* need, namely, consistency, another species, logical knowledge. Genetically, the alogical may seem to have preceded the purely logical; conversely, now, the latter may serve as a means to the satisfaction of some more ultimate alogical end where success is the goal. Is not the logical, therefore, either to be reduced to, or has it not been abstracted from, the alogical? To the last question the reply may be 'yes,' to the first 'no'; for successful knowledge is a matter of twofold, of two-dimensional, implication, alogical and logical. Springing from different 'roots,' and with both necessary to success, and though the latter may have been abstracted from that in which the alogical element was also present, the two are and remain *distinct,* yet coexistent, elements.

Finally, and to complete our scheme: Whence the needs for which there is demanded a readjustment, satisfactory and successful? And the answer is: That, just as the need of satisfaction is not the satisfaction of the need, so is the source of the need not the need itself; but that the transcendent which is the means of satisfaction is also the source of the need of this. The need arises in conflict, the satisfaction rests in harmony.

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